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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/669,057	09/24/2003	Toshio Hashimoto	242867US6	4005
22850	7590	09/28/2006		
C. IRVIN MCCLELLAND OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER FLANIGAN, ALLEN J	
			ART UNIT	PAPER NUMBER
			3753	

DATE MAILED: 09/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	<b>Application No.</b> 10/669,057	<b>Applicant(s)</b> HASHIMOTO, TOSHIO	
	<b>Examiner</b> Allen J. Flanigan	<b>Art Unit</b> 3753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 09 August 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) 3-6, 8-10, 13 and 15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 7, 11, 12, and 14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

Claims 3-6, 8-10, 13, and 15 stand withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention.

Claim 2 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1, 2, 7, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sagal et al. in view of Itoh and Hendricks et al.

As stated in a previous Office action, Sagal et al. teach a heat pipe for cooling heat generating electronic components such as CPUS that employs a construction with conductive filler such as carbon fibers molded in a polymer base. Sagal et al. do not expressly disclose a "capillary action member".

It is well known in the heat pipe art to provide a wicking means to provide capillary flow of liquid to permit heat pipes to direct heat flow against, or in the absence of, gravitational forces. Meyer IV et al. is cited to support the examiner's position regarding the well known nature of the use of capillary wicks to allow heat pipes to operate independent of gravity (lines 20-28 of column 1 of Meyer IV et al.) Such wicking means can also serve to improve

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wetting of the evaporator section of a heat pipe. Itoh teach the use of grooves 15 on the internal surface of a heat pipe for electronic cooling to provide capillary flow of liquid within the heat pipe. In view of this, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to provide such grooves in the heat pipe of Sagal et al. to enhance liquid flow.

Finally, Sagal et al. expressly indicate that "other base materials and conductive fillers may be used" besides the carbon fibers suggested (lines 40-42 of column 4). Hendricks et al. teach that it is known to embed carbon nanotubes in polymer/resin binders to form heat pipes (see paragraphs 34, 35 of Hendricks et al.). According to Hendricks et al., single wall nanotubes or SWNTS "can basically be described as nanoscale cylinders of graphite". In view of Sagal et al.'s suggestion of carbon fibers, and their express suggestion regarding substituting other conductive fillers, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to substitute the nanotubes taught in Hendricks et al. for the carbon fibers taught in Sagal et al., such being no more than the substitution of known equivalents.

Claims 12 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sagal et al. in view of Itoh and Hendricks et al. as applied to claims 1 and 11 above, and further in view of Katsui.

As shown by Itoh and also discussed in Sagal et al. (see fins 6 of Itoh, see lines 31-34 of column 5 of Sagal et al.), it is known to provide a "heat sink" (i.e. fins for extended surface area for improved heat rejection) in the heat rejection (condenser) region of a heat pipe. Katsui further show that it is well known in the art to provide a fan to give forced convection cooling of such fins to increase heat rejection capability. Thus, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to employ a fan with the heat pipe of Sagal et al., modified to include the internal capillary grooves taught in Itoh.

Applicant's arguments filed 8/9/2006 have been fully considered but they are not persuasive.

Applicants comments on pages 7-8 imply erroneously that Hendricks et al. is limited to teaching using carbon nanotubes in a metal matrix. See cited paragraphs above.

Beyond this point, applicants mostly include generalized statements to the effect that:

1. No single reference shows all of the claimed features,
2. Hindsight has been used to combine references, and
3. The prior art "contains no suggestion to combine".

*Gambro*, cited by the applicant, is inapposite in that the case apparently involved a rejection for which there was no teaching reference suggesting the key feature missing from the primary reference. That is clearly not the case

here. Further, it is well that applicant cites *Motorola* in admitting that “a reference need not expressly teach that the disclosure contained therein should be combined with another”; as the CAFC pointed out in *Nilssen*:

Nilssen urges this court to establish a “reality-based” definition whereby, in effect, references may not be combined to formulate obviousness rejections absent an express suggestion in one prior art reference to look to another specific reference. We reject that recommendation as contrary to our precedent which holds that for the purpose of combining references, those references need not explicitly suggest combining teachings, much less specific references. *See, e.g., In re Sernaker*, 702 F.2d 989, 995, 217 USPQ 1, 6 (Fed. Cir. 1983); *In re McLaughlin*, 443 F.2d 1392, 1395, 170 USPQ 209, 212 (CCPA 1971).

The hindsight argument is a common one and fails to distinguish between permissible and impermissible hindsight. As the court pointed out in *McLaughlin*, *supra*,

“[a]ny judgement on obviousness is in a sense necessarily a reconstruction based on hindsight reasoning, but so long as it takes into account only knowledge which was within the level of ordinary skill in the art at the time the claimed invention was made and does not include knowledge gleaned only from applicant’s disclosure, such a reconstruction is proper.” Clearly, the knowledge that capillary grooves can be used in heat pipes, that carbon nanotubes can be used as conductive filler in heat pipes, and that fans and

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fins can be used to enhance cooling via heat pipes is not knowledge gleaned only from applicant's disclosure, as the cited references attest.

Applicants also cite a decision, *Winner International*, for the proposition that a motivation to combine teachings must suggest the "desirability" of adding or changing a feature, etc. The issue of ample motivation has already been addressed (see pages 3-4 of the Final rejection mailed 5/9/2006).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allen J. Flanigan whose telephone number is (571) 272-4910. The examiner can normally be reached on M-F 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eric Keasel can be reached on (571) 272-4929. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Allen J. Flanigan  
Primary Examiner  
Art Unit 3753

AJF